

Refrangibility, as is manifest by the 5th, 6th, 7th, 8th, and 9th Experiments. And those which the first time at like Incidences are equally refracted, are again at like Incidences equally and uniformly refracted, and that whether they be refracted before they be separated from one another as in the 5th Experiment, or whether they be refracted apart, as in the 12th, 13th and 14th Experiments. The Refraction therefore of every Ray apart is regular, and what Rule that Refraction observes we are now to shew.

The late Writers in Opticks teach, that the Sines of Incidence are in a given Proportion to the Sines of Refraction, as was explained in the 5th Axiom; and some by Instruments fitted for measuring Refractions, or otherwise experimentally examining this Proportion, do acquaint us that they have found it accurate. But whilst they, not understanding the different Refrangibility of several Rays, conceived them all to be refracted according to one and the same Proportion, 'tis to be presumed that they adapted their Measures only to the middle of the refracted Light; so that from their Measures we may conclude only that the Rays which have a mean degree of Refrangibility, that is those which when separated from the rest appear green, are refracted according to a given Proportion of their Sines. And therefore we are now to shew that the like given Proportions obtain in all the rest. That it should be so is very reasonable, Nature being ever conformable to her self: but an experimental Proof is desired. And such a Proof will be had if we can shew that the Sines of Refraction of Rays differently Refrangible are one to another in a given Proportion when their Sines of Incidence are equal. For if the Sines of Refraction of all the Rays are in given Proportions to the Sine of Refraction

of a Ray which has a mean degree of Refrangibility, and this Sine is in a given Proportion to the equal Sines of Incidence, those other Sines of Refraction will also be in given Proportions to the equal Sines of Incidence. Now when the Sines of Incidence are equal, it will appear by the following Experiment that the Sines of Refraction are in a given Proportion to one another.

Exper. 15. The Sun shining into a dark Chamber through a little round hole in the Window-shut, let S re-
 present his round white Image painted on the opposite Wall by his direct Light, P T his oblong coloured Image made by refracting that Light with a Prism placed at the Window; and *pt*, or *2p 2t*, or *3p 3t*, his oblong coloured Image made by refracting again the same Light sideways with a second Prism placed immediately after the first in a cross Position to it, as was explained in the fifth Experiment: that is to say, *pt* when the Refraction of the second Prism is small, *2p 2t* when its Refraction is greater, and *3p 3t* when it is greatest. For such will be the diversity of the Refractions if the refracting Angle of the second Prism be of various Magnitudes; suppose of fifteen or twenty degrees to make the Image *pt*, of thirty or forty to make the Image *2p 2t*, and of sixty to make the Image *3p 3t*. But for want of solid Glass Prisms with Angles of convenient bignesses, there may be Vessels made of polished Plates of Glass cemented together in the form of Prisms and filled with Water. These things being thus ordered, I observed that all the solar Images or coloured Spectrums P T, *pt*, *2p 2t*, *3p 3t* did very nearly converge to the place S on which the direct Light of the Sun fell and painted his white round Image when the Prisms were taken away. The Axis of the Spectrum P T, that is the Line drawn through the middle of it Parallel to its

Fig. 26.